

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
22 April 2004 (22.04.2004)

PCT

(10) International Publication Number  
**WO 2004/034375 A1**

(51) International Patent Classification<sup>7</sup>: G10G 1/04, 3/04

(21) International Application Number:

PCT/SG2003/000232

(22) International Filing Date:

25 September 2003 (25.09.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

200206223-0 11 October 2002 (11.10.2002) SG

(71) Applicant (for all designated States except US): MAT-SUSHITA ELECTRIC INDUSTRIAL CO. LTD.  
[JP/JP]; 1006, Oaza Kadoma, Kadoma-shi, Osaka  
571-8501 (JP).

(72) Inventors; and

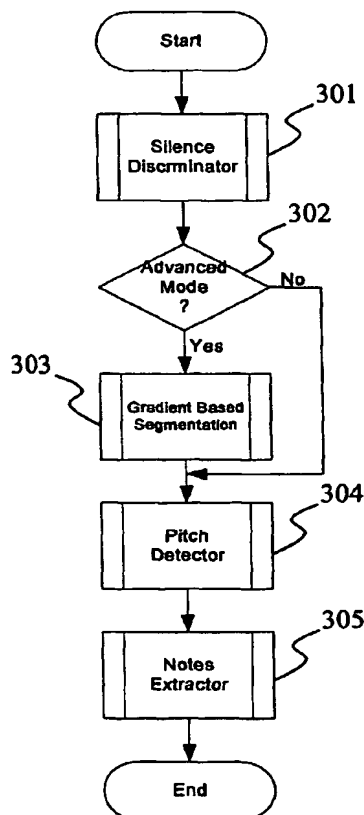
(75) Inventors/Applicants (for US only): TEO, Kok, Keong  
[SG/SG]; Blk 385, #09-49, Tampines Street 32, Singapore  
520385 (SG). CHONG, Kok, Seng [MY/SG]; Blk 50,  
#03-06, Choa Chu Kang North 7, Singapore 689527 (SG).  
NEO, Sua, Hong [SG/SG]; Blk 959, #06-284, Hougang  
Street 91, Singapore 530959 (SG).

(74) Agent: ELLA CHEONG MIRANDAH & SPRUSONS  
PTE. LTD.; P.O. Box 1531, Robinson Road Post Office,  
Singapore 903031 (SG).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,  
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,  
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR DETERMINING MUSICAL NOTES FROM SOUNDS



(57) **Abstract:** This method and apparatus extract symbolic high-level musical structure resembling that of a music score. Humming or the like is converted with this invention into a sequence of notes that represent the melody that the user (usually human, but potentially animal) is trying to express. These retrieved notes each contain information such as a pitch, the start time and duration and the series contains the relative order of each note. A possible application of the invention is a music retrieval system whereby humming forms the query to some search engine.